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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,965	07/14/2003	Scott D. Garner	H1799-00207	5919

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EXAMINER	
MCKINNON, TERRELL L	
ART UNIT	**PAPER NUMBER**
3743	

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/618,965	GARNER ET AL.	
	Examiner	Art Unit	
	Terrell L Mckinnon	3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/7 8/13/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 5-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chao et al. (U.S. 5,412,535) in view of Eastman (U.S. 4,274,479).

Chao discloses a cooling apparatus comprising:

- a tube having an internal surface at least partially covered with a wick, a working fluid disposed within the tube, a sealed first end, and at least one fin projecting radially outwardly from an outer surface of the tube;
- a base sealingly fixed to a second end of the tube, and having a sintered wick disposed on at least a portion of an internal surface;
- the particles layer are formed of copper.

Chao's invention discloses all of the claimed limitations from above except for a grooved sintered wick disposed on at least a portion of an intemal surface; the grooved sintered wick comprising a plurality of individual particles which together yield an average particle diameter, and including at least two lands that are in fluid communication with one another through a particle layer disposed between the at least

two lands wherein the particle layer comprises at least one dimension that is no more than about six average particles diameters; the particle layer comprises a thickness that is about three average particles diameters; and the particle layer extends between a terminal portion of the lands and adjacent portions of the enclosure on the internal surface.

However, Eastman teaches a grooved sintered wick (30) disposed on at least a portion of an intemal surface; the grooved sintered wick comprising a plurality of individual particles which together yield an average particle diameter, and including at least two lands (24) that are in fluid communication with one another through a particle layer disposed between the at least two lands wherein the particle layer comprises at least one dimension that is no more than about six average particles diameters; the particle layer comprises a thickness that is about three average particles diameters; and the particle layer extends between a terminal portion of the lands and adjacent portions of the enclosure on the internal surface.

Given the teachings of Eastman, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat pipe of Chao with grooved sintered wick disposed on at least a portion of an internal surface; the grooved sintered wick comprising a plurality of individual particles which together yield an average particle diameter, and including at least two lands that are in fluid communication with one another through a particle layer disposed between the at least two lands wherein the particle layer comprises at least one dimension that is no more than about six average particles diameters; the particle layer comprises a thickness that is about three

average particles diameters; and the particle layer extends between a terminal portion of the lands and adjacent portions of the enclosure on the internal surface.

Doing so would improve the heat transfer capability of the heat pipe.

1. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chao et al. (U.S. 5,412,535) in view of Eastman (U.S. 4,274,479) as applied to claims above, and further in view of Khrustalev et al. (U.S. 6,536,510).

Chao's invention discloses all of the claimed limitations from above except for six average particle diameters are within a range from about .005 millimeters to about .5 millimeters.

However, Khrustalev teaches the use of a wick having six average particle diameters is within a range from about .005 millimeters to about .5 millimeters (column 6, lines 51-54).

Given the teachings of Khrustalev, it would have been obvious to one of ordinary skill in the art at the time of the invention to furthermore modify the wick of Chao with six average particle diameters being within a range from about .005 millimeters to about .5 millimeters.

Doing so would provide enhance the thermal efficiency of the heat pipe.

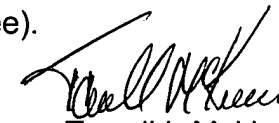
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited for disclosing related limitations of the applicant's claimed and disclosed invention. Hamburgen et al, Tajima, Sarraf, Tanaka et al, Meyer, IV et al, Luo and Moore.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L Mckinnon whose telephone number is 703-305-0059. The examiner can normally be reached on Monday -Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 308-0101. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Terrell L Mckinnon
Primary Examiner
Art Unit 3743
November 15, 2004